



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,047	05/04/2001	Gabriel Li	5298-04500	9067

7590 08/14/2002
Kevin L. Daffer
Conley, Rose & Tayon, P.C.
P.O. Box 398
Austin, TX 78767-1400

EXAMINER

LEWIS, MONICA

ART UNIT	PAPER NUMBER
----------	--------------

2822

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/849,047

Applicant(s)

LI ET AL.

Examiner

Monica Lewis

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 17-21 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 17-21 and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the application filed May 4, 2001.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-13, 17-21 and 23-25, drawn to a semiconductor structure for a transistor for reducing noise coupling, classified in class 257, subclass 509.
 - II. Claims 14-16, 22 and 26-28 drawn to the method for forming a transistor for reducing noise coupling, classified in class 438, subclass 400.

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

A telephone call was placed to Kevin L. Daffer on August 8, 2002 which resulted in a provisional election being made with traverse to prosecute the semiconductor structure for a transistor for reducing noise coupling, claims 1-13, 17-21 and 23-25. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-16, 22 and 26-28 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “first portion” and “second portion” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-13 and 23-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by the following: a) “a second portion spaced apart from and laterally surrounding the first portion” (See Claim 1); b) “first portion” (See Claims 1 and 4-6); and c) “second portion” (See Claims 1, 2, 4 and 5). Claims 3 and 7-13 and 23-25 depend directly or indirectly from a rejected claim and are, therefore, also rejected under 35 U.S.C. 112, second paragraph for the reasons set above.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 6-9 and 11, as far as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Wildi et al. (U.S. Patent No. 4,862,242).

In regards to claim 1, Wildi et al. ("Wildi") discloses the following:

a) transistor (350) formed in a well region (350) of a semiconductor substrate, wherein the well region and the semiconductor substrate are of the same conductivity type (See Figure 3); and

b) a buried layer (318) formed within the substrate below the well region, wherein the buried layer is of opposite conductivity type than the well region, and wherein the buried layer includes a first portion underlying the transistor and a second portion spaced apart from and laterally surrounding the first portion (See Figure 3).

In regards to claim 2, Wildi discloses the following:

a) a doped annular region (314 and 316) of opposite conductivity type as the well region and extending past the well region to contact the second portion of the buried layer (See Figure 3).

In regards to claim 3, Wildi discloses the following:

a) the doped annular region laterally surrounds the transistor without surrounding other transistors of the integrated circuit (See Figure 3).

In regards to claim 6, Wildi discloses the following:

a) one or more contact diffusions (364) within the well region adapted for making contact to the well region (See Figure 3).

In regards to claim 7, Wildi discloses the following:

a) one or more contact diffusions comprises a contact diffusion laterally adjacent to and in contact with the source region (352) (See Figure 3).

In regards to claim 8, Wildi discloses the following:

a) one or more contact diffusions comprises an annular contact diffusion arranged laterally within the doped annular region and laterally surrounding the transistor (See Figure 3).

In regards to claim 9, Wildi discloses the following:

a) a contact (320) to the doped annular region (See Figure 3).

In regards to claim 11, Wildi discloses the following:

a) an annular dielectric isolation region laterally surrounding the transistor (See Figure 3).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 5, 10, 17-19 and 23-25, as far as understood, are rejected under 35 U.S.C. 103(a) as obvious over Wildi et al. (U.S. Patent No. 4,862,242).

In regards to claim 4, Wildi fails to disclose the following:

a) first and second portions of the buried layer are separated by a distance of less than about 5 microns.

However, the applicant has not established the critical nature of the dimension of less than about 5 microns. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such

Art Unit: 2822

a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

In regards to claim 5, Wildi fails to disclose the following:

a) first and second portions of the buried layer are separated by a distance of approximately 1.2 microns.

However, the applicant has not established the critical nature of the dimension of approximately 1.2 microns. “The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

In regards to claim 10, Wildi fails to disclose the following:

a) metallization adapted to connect the well region and the doped annular region to opposite polarities of a supply voltage.

However, the limitation of “metallization” makes it a product by process claim. The MPEP § 2113, states, “Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process.” *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 17, Wildi discloses the following:

- a) a transistor formed in a well region of a semiconductor substrate, wherein the well region is of the same conductivity type as the substrate (See Figure 3);
- b) a buried layer formed within the substrate below the well region, wherein the buried layer is of opposite conductivity type than the well region (See Figure 3); and
- c) a doped annular region extending through the well region to contact the buried layer, wherein the doped annular region is of the same conductivity type as the buried layer (See Figure 3).

In regards to claim 17, Wildi fails to disclose the following:

- a) metallization adapted to connect the well region to one polarity of a supply voltage for the integrated circuit, while precluding connection of the doped annular region to the other polarity of the supply voltage.

However, the limitation of "metallization" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though

Art Unit: 2822

the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 18, Wildi fails to disclose the following:

a) the metallization is adapted to preclude connection of the doped annular region to any supply voltage of the integrated circuit.

However, the limitation of "metallization" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also

In re Brown and Saffer, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 19, Wildi fails to disclose the following:

a) the metallization is adapted to connect the well region and doped annular region to the same polarity of the supply voltage.

However, the limitation of "metallization" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether

claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 23, Wildi discloses the following:

a) a depletion region bridging the separation between the first and second portions of the buried layer, during times in which the well region and the doped annular region are connected to said opposite polarities of the supply voltage (See Figure 3).

In regards to claim 24, Wildi discloses the following:

a) the depletion region bridges the separation at a lower end of the buried layer (See Figure 3).

In regards to claim 25, Wildi discloses the following:

a) the depletion region increases noise isolation between the well region and the substrate (See Figure 3).

10. Claims 12, 13, 20 and 21, as far as understood, are rejected under 35 U.S.C. 103(a) as obvious over Wildi et al. (U.S. Patent No. 4,862,242) in view of Watanabe et al. (U.S. Patent No. 6,051,868).

In regards to claims 12 and 20, Wildi fails to disclose the following:

a) transistor is an output transistor for the integrated circuit.

However, Watanabe et al. ("Watanabe") discloses an output transistor (See Column 5 Lines 20-34). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Wildi to include an output transistor as disclosed in Watanabe because it aids in reducing crosstalk.

In regards to claims 13 and 21, Wildi fails to disclose the following:

a) one or more analog circuit portions.

Art Unit: 2822

However, Watanabe et al. ("Watanabe") discloses an analog circuit (See Column 2 Lines 32-37). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Wildi to include an analog circuit as disclosed in Watanabe because it aids in reducing crosstalk.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 703-308-4940. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML
August 9, 2002


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800